



## Extending pedestrianization processes outside the old city center; conflict and benefits in the case of the city of Seville



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### ABSTRACT

Pedestrianizing areas that are generally in the old part of town has been widely used in recent years in both developed and developing countries as a way to improve urban quality in cities traditionally designed for intensive vehicle use. This paper applies discrete demand models to examine the satisfaction of citizens or frequent visitors with these schemes in two streets that are not part of the urban center of the city of Seville (Spain) and the conclusions that are drawn can be easily extrapolated to other cities, irrespective of the country that they are in. These two pedestrianizations outside the traditional inner city are clearly positively valued by citizens, especially by people living in the vicinity of the pedestrianized streets and by the collectives that have more available free time or more flexible schedules. They have also been especially welcomed by citizens who are more aware of the need for environmental protection and calling for a more a more sustainable city. The results show that both pedestrianizations have resulted in significant changes in citizens' shopping and consumption habits in establishments located in the pedestrian zones, which have been turned into open air malls with improvements to their lively ambience. These findings are repeated in countries at different levels of development. These results are in stark contrast to the strong social rejection that existed during the period that the road works to pedestrianize the zones were being planned and executed. In fact, the results show the importance of the time variable, as the more time that has passed since the works were finalized, the better the variables that measure satisfaction with the pedestrianizations have become, and the less negative the perception of the negative externalities associated with the road works.

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### Introduction

For over thirty years, cities in developed countries have usually been designed to maximize traffic flow (Seřtokas, 1980) with a non-stop decrease in the number of pedestrians (Robertson, 1993; Southworth, 2005). Some authors go further still and consider the streets to be “dead places” from a social point-of-view, “killed” by the vehicles for which they were built (Appleyard, 1983). This trend has again been replicated in developing countries in general in recent times (Iranmanesh, 2008) and certain urban villages in China can be highlighted as an example in point (Liu, He, Wu, & Webster, 2010). This process is taking place belatedly compared to the more developed countries, but also at an accelerated rate as a consequence of rapid industrialization and urbanization in these countries (Chen, Liu, & Tao, 2013).

However, the beginnings of a turnaround can be seen in this process (Robertson, 1993) in both developed and developing countries, with growing concern for the adverse effects that cities designed to prioritize vehicle traffic are having on the environment (Sisiopiku & Akin, 2003; Wong & Lau, 2013). As part of this rising concern we can highlight a scheme that has acquired great importance in processes to redesign cities, pedestrianization. Pedestrianization can be defined as restricting or eliminating traffic in a street or streets for the use of pedestrians only (Hass-Klau, 1993). A differentiation should be made between pedestrianization processes and traffic calming, defined as the application of measures such as road humps, tree planting or speed cushions to impress upon the driver that the street is primarily for shopping or residential use (Slinn, Matthews, & Guest, 2005).

There is worldwide interest in analyzing pedestrianization and traffic calming processes and it is evidently a ‘hot topic’ in urban studies in both developed and developing countries. Studies in the EU can be cited in the first case, principally Germany, (Hass-Klau, 1984, 1993; Ward, 2010) and the UK (Turner & Giannopoulos, 1974; Whitehead, Simmonds, & Preston, 2006), and others in the

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United States (Ahn & Rakha, 2009; Giuliani, Rose, & Lynn, 1997; Robertson, 1993). With regard to the developing countries, the studies that focus on Asia stand out mainly, those on Turkey (Dokmeci, Altunbas, & Yazgi, 2007), Iran (Iranmanesh, 2008), Hong Kong (Yiu, 2011), India (Samuel, 2013) Indonesia (Lo, 2010), Malaysia (Ghahramanpouri, Lamit, & Sedaghatnia, 2012) and Singapore (Yuen & Chor, 1998).

A joint analysis of all of these quickly leads to the conclusion that the lessons that can be learned from these studies are very similar, and that their conclusions can therefore be easily extrapolated from one city to another, irrespective of the country of origin.

The following conclusions stand out especially. Firstly, the impact on the environment stands out with respect to the positive effects of pedestrianization schemes in cities, including significant reductions in environmental and noise pollution after pedestrianization schemes have been implemented (Chiquetto, 1997; Sisiopiku & Akin, 2003). Secondly, the economic impacts of the pedestrianization processes that stand out include increases in retail turnover (Hass-Klau, 1993; Sandahl & Lindh, 1995) and in retail rent value (Yiu, 2011). Finally, the positive social impacts of pedestrianization schemes that can be highlighted are the increase of the speed and efficiency of pedestrian movement (Giuliani et al., 1997; Hass-Klau, 1993), reductions in the number of accidents (Ahn & Rakha, 2009) and the improved attraction of location and visitor attitudes (Sandahl & Lindh, 1995).

The possible adverse effects on the environment include the fact that pedestrianization tends to worsen accessibility to car users, and often generates an increase in the traffic flow in the surrounding areas, which represents increased travel time and fuel consumption for travelers (Chiquetto, 1997). In the economic and social aspect, access to pedestrianized zones is a subject of utmost importance. If pedestrian streets are not easily accessible to a large segment of the local population their activity levels will steadily diminish (Robertson, 1993). Furthermore, pedestrianization can discourage car users to travel to the traffic-free area and induce changes to other more accessible destinations, usually situated out-of town (Chiquetto, 1997). Consideration should also be given to the fact that pedestrianization can result in the replacement of some retail shops for chain stores due to rent increases in central pedestrianized areas, and also cause pedestrianized streets to be empty at certain hours of the night due to a lack of specialized local or traditional businesses, or hospitality businesses with longer opening hours (Robertson, 1993).

Anti-pedestrianization groups find their justification in these possible negative effects. The first of these groups worth highlighting is drivers due to limitations on car access to these areas; secondly, some residents in the area find access to their homes by vehicle impeded or public transport stops moved further away (Castillo-Manzano & Sánchez-Braza, 2013a); thirdly, workers in the area experience a possible increase in the amount of time that it takes them to reach their places of work (Whitehead et al., 2006); and finally, retailers and their associations due to the possible fall in sales that would be brought about by making pedestrian access difficult on account of the lack of parking space and public transport. This opposition from retailers is repeated again and again in both developed countries (Del Campo Tejedor, 2009; Hass-Klau, 1993; Salman, 2000) and in developing countries (Samuel, 2013; Segawa, 2013), which once more shows the great similarity between cities in the two country categories for this topic. The same can be said of the need to include information campaigns, studies and modelizations prior to a pedestrianization or traffic calming scheme being implemented to try to overcome resistance to change from these interest groups (Biddulph, 2011; Davies, 2012; Samuel, 2013).

In view of the conflict linked to many pedestrianization processes, the objective of this paper is to analyze citizens' or frequent visitors' satisfaction with a city where pedestrianization schemes have been implemented in certain streets that are not located in the urban city center. The specific case analyzed is that of the city of Seville (Spain) and San Jacinto and Asunción streets, which are situated in neighborhoods near the city center but physically separated from it by the Guadalquivir River (see Fig. 1).

This study presents two novelties. On the one hand, the areas under study are outside the historical city center, where pedestrianization schemes are more accepted or tolerated as, amongst other things, they preserve the historical heritage and contribute to local residents and tourists being able to gain more enjoyment from it. In fact, the pedestrianization processes and their effects on urban quality have long been studied in city centers in developed countries (Hass-Klau, 1984, 1993; Robertson, 1991) and in developing countries (Dokmeci et al., 2007), although the same cannot be said when the same processes have been undertaken outside the city center.

On the other hand, the factors that determine public satisfaction with the pedestrianization process are analyzed in an original way from two points-of-view, firstly, by scoring citizens' subjective opinions of these processes, and, secondly, by a more objective analysis of the frequency with which these same citizens visit the pedestrianized streets. This second analysis will be used to show the determinants of people's preferences as revealed by their behavior compared to the first study, which analyzes a described, more subjective satisfaction and that might, therefore, be affected by people's political viewpoints, for example, as these pedestrianization processes have been a highly controversial topic of debate between the local government and the political opposition in Seville.

### Pedestrianization processes in the city of Seville

Seville, with a population of 702,355 inhabitants possesses the largest historical city center in Spain and one of the largest in all Europe, covering an area of 394 Has (974 acres) within the boundaries of the old city walls (see Fig. 1).

From 2002, Seville's Municipal Government has rolled out a range of policies aimed at combining the protection of the city's heritage with substantially improving the sustainable mobility of its citizens. This series of measures envisaged the pedestrianization of a number of areas of the city, developing alternative transport systems to the private automobile, such as the subway, the tram and the bicycle (see Castillo-Manzano & Sánchez-Braza, 2013b on the development of cycling in Seville), and also creating specific urban bus lanes. This array of actions has substantially reduced the emission of fumes (Seville Municipal Government, 2010) and the deterioration of the various monuments and emblematic buildings in Seville's historical old city center caused by the traffic (Del Campo Tejedor, 2009).

Focusing on pedestrianization, the first phase was implemented in the old city center (2006–2008) before being extended to other areas outside the center (2009–2010) and it is these areas that are analyzed in this paper. These actions are shown in Fig. 1.

This paper specifically analyzes Asunción and San Jacinto Streets (see Fig. 1). Asunción Street is 875 m long with 520 m pedestrianized. Before pedestrianization there was a clash between the right of transit and retailers, resulting in permanent traffic congestion. The daily transit amounted to 8922 vehicles which emitted 160 tonnes of CO<sub>2</sub> per annum. Meanwhile, San Jacinto Street is 655 m long with 210 m pedestrianized. Before pedestrianization it was used by 15,000 vehicles daily, which clashed with the strong retail nature of the street. The part that has been pedestrianized was classified as one of the noisiest in the city of Seville (Seville Municipal Government, 2010).

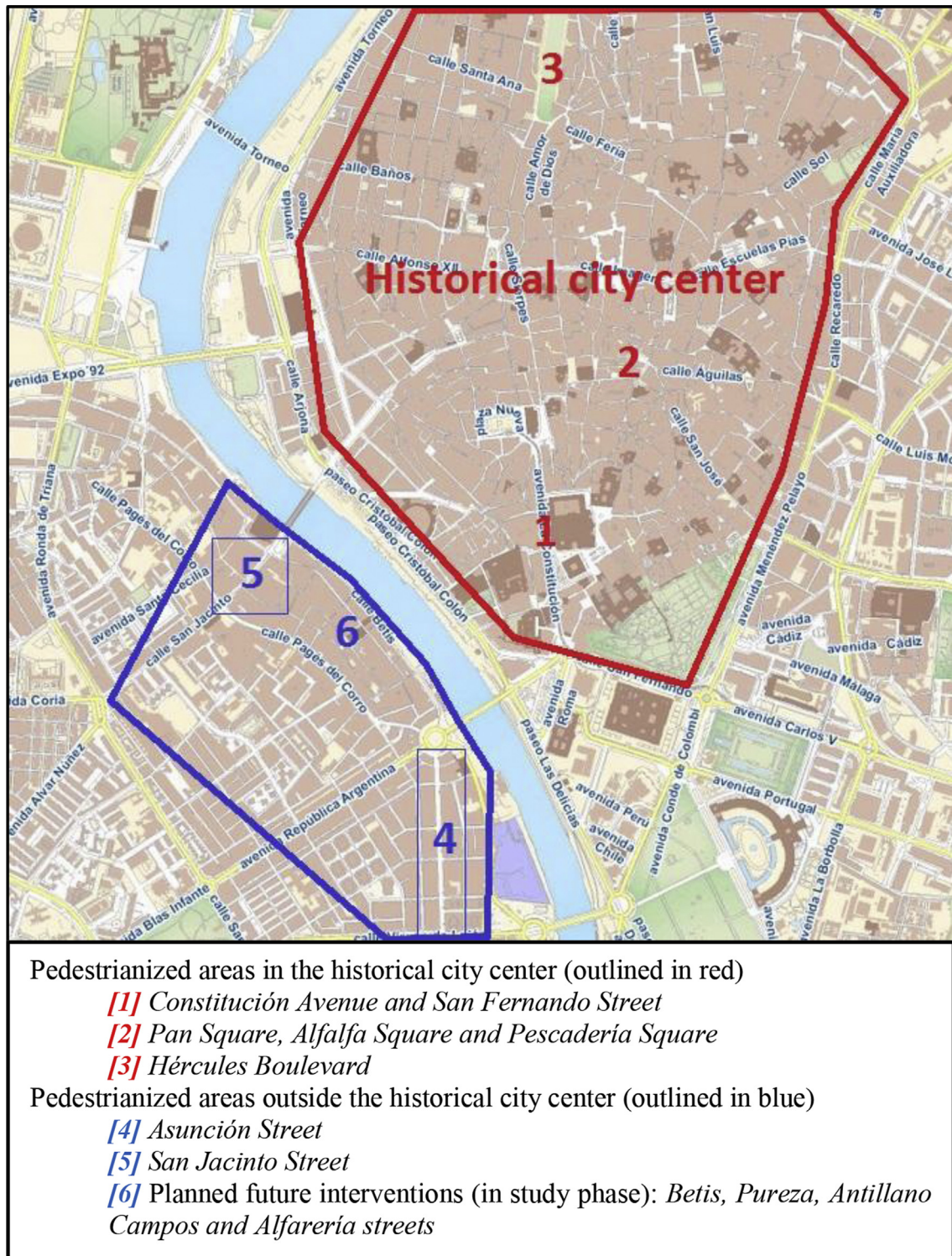


Fig. 1. Location of pedestrianized streets in Seville.  
Source: Seville Municipal Government (2013).

A range of citizen participation schemes were applied for the various pedestrianization projects to be implemented in Seville, from the basic information model to the involvement model, where residents could choose some of the construction materials (Del Campo Tejedor, 2009). The choice of one particular model or another was in many cases mainly driven by the opinions of local

residents in the areas to be pedestrianized, as well as cultural or business associations and a number of organizations with a significant degree of influence in the city, such as the Council of Religious Brotherhoods (according to Castillo-Manzano and Sánchez-Braza (2013a), Holy Week has an enormous bearing on any changes made to the city).

**Table 1**  
Interview campaign and data.

Field work	Place	Random points in the two pedestrian zones		
	Period	February-11	June-11	June-12
How information was obtained	Interview with closed questionnaire		22 questions	
	Universe	Citizens of Seville or frequent visitors to its metropolitan area		
Sampling	Sample size	229	225	319
	Sampling method	Random selection of passers-by.		

The most important criticisms made of pedestrianization in Seville were that it hampered access to the pedestrianized zones; the loss of surface-level parking space, which was to the benefit of shopping malls over traditional retail outlets (Guy, Bennison, & Clarke, 2005); and, subsequently, post-pedestrianization, the problems caused by the coexistence of ordinary pedestrians, cyclists (CANP, 2011), street performers, street cafés and bars and the tram. The anti-pedestrianization social movement was especially forthright with regard to pedestrianizations outside the historical city center. To be specific, a group of local residents and retailers affected by the closure of Asunción Street to traffic ([4] in Fig. 1), set up a civic platform called 'No to Pedestrianization' and attracted more than 11,000 signatures to a petition to try and halt pedestrianization of the street. In fact, anti-pedestrianization posters filled store windows in the neighborhood for months.

## Data and methodology

In our study a broad database created from a series of ad hoc survey campaigns will be used and discrete choice models applied. To be precise, a survey was carried out in three waves in the two pedestrian zones, Asunción Street and San Jacinto Street, to analyze how well the pedestrianization had been received by citizens in the city. The survey was carried out in three different waves in order to observe any evolution in citizens' opinions over the year in which the two pedestrian zones rapidly consolidated, especially with the opening of a large number and variety of retail and F&B establishments. The total size of the sample considered was 773 surveyees. The specific data are set out in Table 1. These surveys were used to construct the variables used in the analysis, which are described in Table 2 along with the main descriptive statistics.

As commented in the introduction, citizens' satisfaction with the pedestrianization process is measured from two points-of-view. Firstly, with a more subjective focus; the factors are analyzed that determine the satisfaction with the pedestrianization process as described by the citizen (a.1. Satisfaction variable) on a scale from 0 to 10. A logit ordered regression was used for this as it maximizes the log pseudolikelihood (the results are available from the author upon request), unlike the probit ordered regression. Secondly, the factors are studied that have had any influence on the citizen increasing the frequency with which s/he frequents the pedestrianized street post-pedestrianization, (a.2.  $\Delta$  Frequency variable). A logit model has been used in this case as, once more, unlike a probit regression it maximizes the log pseudolikelihood (the results of this test are also available from the author upon request). Specifically, variable a.2.  $\Delta$  Frequency will take a score of 1 if the citizen has moved up to a higher category of visits to the pedestrian zone, with the three possible categories being: from 0 to 5 days per month; from 6 to 15 days per month and from 16 days to all the days in the month.

As for other discrete choice models, coefficients in binary models lack a direct interpretation, with the exception of their sign. Therefore, for the logit regression the marginal effects at the mean of each significant independent variable have also been included. Unfortunately it does not make sense to calculate this marginal

effect at the mean for the first regression, the ordered logit regression, as the dependent variable, a.1. Satisfaction variable, has 11 possible values.

Meanwhile, the standard errors robust to heteroscedasticity and clustered by the date on which the survey was taken, specifically, the date of the three waves, have been estimated in both regressions to take into account the factors that are exogenous to our analysis that changed between the first wave of the survey, in February, 2011, and the last, in June, 2012. This enabled us to capture two exogenous changes that the city of Seville experienced, one of which was economic in nature and the other political. In the economic aspect, Seville's economy continued on its steep downturn between 2011 and 2012, with a rise in the unemployment rate in the province from 26.52% in the first quarter of 2011 (first wave of surveys) to 30.94% in the second quarter of 2012 (third wave), a change that could have affected the f.1.  $\Delta$ Shopping and f.2.  $\Delta$ F&B variables, for example. Meanwhile, the serious and long-lasting economic crisis has been having major effects on the urban retail network, especially with regard to traditional retailers, which means that more and more of Seville's streets, including the pedestrianized Asunción street, have a lot of empty stores.

Secondly, on the political front, in June 2011 the political color of the municipal government changed, resulting in an easing of the political tension that the pedestrianization schemes studied in this paper had helped to give rise to. To be more precise, the conservative party, which had previously been very critical of pedestrianization schemes outside the old city center, came to power in 2011. This party had been instrumental in intensifying the claims of anti-pedestrianization groups both in the media and at city council meetings and, as can be confirmed in local newspaper archives, even went as far as to claim that pedestrianization processes such as these were using people's taxes to penalize them in their own neighborhoods. Yet it is also easy to read in these same newspaper archives that, after the elections, the new conservative local government abandoned its critical position and at the current time is even proposing new pedestrianizations, both within the old city center<sup>1</sup> and outside it.<sup>2</sup> Obviously, the fact that the conservative party, which currently has the greater support of the electorate, has gradually changed its position regarding pedestrianizations might have had a favorable effect on the scoring.

## Results and discussion

Table 3 gives the results of the estimates of the two dependent variables. These results show a set of variables that are clearly related to the dependent variables.

The absolute variables show a quite favorable general perception of the pedestrianization processes being extended outside the historical city center, with an average score of 7 on a scale of 0–10

<sup>1</sup> <http://www.diariodesevilla.es/article/sevilla/1735817/ayuntamiento/planea/una/nueva/peatonalizacion/centro.html>.

<sup>2</sup> <http://elcorreoweb.es/2013/07/06/triana-se-prepara-para-peatonalizar-siete-calles-y-blindar-al-trafico-santa-ana/>.

**Table 2**  
Variables and descriptive statistics.

Name	Explanation	No. obs. = 1	Mean	Std. dev.
<i>a) Dependent variables</i>				
a.1.Satisfaction	Score of satisfaction with the street pedestrianization process from 0 to 10.	–	6.950	2.114
a.2.ΔFrequency	1 if there has been a significant increase in the number of times that you visit the area since pedestrianization; 0 otherwise.	205	0.265	0.442
<i>b) Date of survey and personal characteristics</i>				
b.1.Date	1 if survey is in Jun-12; 0 if Feb-11 or Jun-11.	320	0.413	0.493
b.2.Gender	1 if male; 0 if female.	346	0.448	0.500
b.3.Age	Age of person surveyed (between 89 and 14 years).	–	36.591	17.120
b.4.Education	0 if no formal education; 1 if school leaving certificate; 2 if high school diploma or professional training; 3 if upper grade professional training; 4 if shorter graduate degree; 5 if longer licentiate degree; 6 if PhD.	–	2.711	1.572
b.5.Resident	2 if resident of the pedestrian zone neighborhood, 1 if resident of another neighborhood in Seville; 0 otherwise.	–	0.897	0.822
b.6.Work	1 if in the pedestrian zone for reasons of work; 0 otherwise.	134	0.173	0.389
b.7.Leisure/shop	1 if in the pedestrian zone for leisure/shopping; 0 otherwise.	478	0.618	0.525
<i>c) Surveyee's employment status. Base category includes employed</i>				
c.1.Unemployed	1 if unemployed; 0 otherwise.	89	0.115	0.320
c.2.Self-employed	1 if self-employed; 0 otherwise.	64	0.083	0.276
c.3.Retired	1 if retired; 0 otherwise.	71	0.092	0.289
c.4.Homemaker	1 if homemaker; 0 otherwise.	81	0.105	0.307
c.5.Student	1 if student; 0 otherwise.	208	0.269	0.444
<i>d) Scoring of the effects that the pedestrianization process has had for the neighborhood</i>				
d.1.Lively	1 if thinks that it has made the neighborhood more lively (greater influx of people); 0 otherwise.	698	0.904	0.299
d.2.Benefit	If the neighborhood has generally benefited: 1 if strongly agree; 2 if agree; 3 if disagree; 4 if strongly disagree.	–	1.861	0.731
d.3.Access	Has had a negative effect on access to the neighborhood: 1 if strongly agree; 2 if agree; 3 if disagree; 4 if strongly disagree.	–	2.489	0.894
d.4.Open-air-mall	Has improved the supply of retail and catering outlets: 1 if strongly agree; 2 if agree; 3 if disagree; 4 if strongly disagree.	–	1.886	0.722
d.5.Independent retailer	Has been good for the small independent retailer: 1 if strongly agree; 2 if agree; 3 if disagree; 4 if strongly disagree.	–	2.894	0.784
d.6.Road works	Score the way that the road works to pedestrianize the street were carried out, from 0 to 10.	–	4.456	2.217
<i>e) Scoring other urban transportation policies</i>				
e.1.Pub-transp	Score given to quality of public transportation in Seville, from 0 to 10.	–	5.910	2.360
e.2.Pedest-center	Degree of agreement with pedestrianization of main streets in Seville old town, from 0 to 10.	–	7.319	2.109
e.3.Bicycle	Score given to public policies to promote bicycle use, from 0 to 10.	–	6.653	2.533
<i>f) Changes in interviewee's habits</i>				
f.1.ΔShopping	1 if has increased number of purchases made in the zone since pedestrianization; 0 otherwise.	364	0.473	0.530
f.2.ΔF&B	1 if has increased consumption of F&B in the zone since pedestrianization; 0 otherwise.	429	0.554	0.523

(see the mean of the a.1. Satisfaction variable in Table 2). Numerous significant changes can also be observed in citizen's habits post-pedestrianization. Specifically, 26.5% of surveyees have significantly increased the frequency with which they visit the zone (see the mean of the a.2. ΔFrequency variable in Table 2), while 47% recognize that there has been an increase in the number of purchases that they make in the pedestrian zone (see the mean of the f.1. Δshopping variable in Table 2) and a majority of surveyees, over 55%, recognize that there has been an increase in the amount that they consume in F&B establishments (see the mean of the f.2. ΔF&B variable in Table 2).

These changes in habits are more evident in the last wave of surveys, when the social conflict surrounding the issue had practically disappeared. To be specific, in the June 2012 wave, almost 33.5% of citizens recognized that there had been a significant increase in the number of visits that they made to the zone, 51% in their purchases, and almost 62% in their consumption habits in F&B establishments. These last two results are even more striking when the rapid decline in the Spanish economy between 2011 and 2012 –and also that of the city of Seville– are taken into account.

These results would seem to indicate that the outcome of these increases might be a zero game sum; i.e., that the increase in money spent in these neighborhoods could be more or less equivalent to a falls spending in other neighborhoods. Answering this question is a

future line of research. However, *a priori* this does not necessarily have to be the case, as proximity and improved accessibility to the commercial outlets in the area (see Castillo-Manzano & López-Valpuesta, 2009 on this aspect) might boost spending by local people in the pedestrianized zones, as these are factors that raise consumer loyalty (Swoboda, Berg, Schramm-Klein, & Foscht, 2013) and reduce the transaction costs associated with any purchases, such as transport or time costs (Martinez-Ruiz, Jimenez-Zarco, & Izquierdo-Yusta, 2010).

The almost total unanimity among citizens when considering the increase in the influx of people into the zone thanks to pedestrianization also attracts attention. Over 90% of surveyees consider that the ambience of the area is now livelier. Another thing that stands out is that none of the negative aspects that detractors of the pedestrianization processes expressed in the public debate on the issue (the inconvenience of the road works; difficulties in gaining access to the neighborhood for all types of vehicles and the harm done to small, traditional retailers) is clearly and explicitly stated by the surveyees. In fact, the only aspect that is alluded to with a slightly negative score is related to the way that the road works were carried out. During the first wave of surveys, in February 2011, when the memories of the road works were still fresh in the mind, the average score that they received was 4, although in the last wave, in June 2012, this had risen to 5.

**Table 3**  
Coefficients and marginal effects for the estimation of the satisfaction level and frequency of visit.

Variable	a.1. Satisfaction (ordered logit)	a.2. ΔFrequency (logit)	
		Coefficients	Marginal effects
b.1.Date	0.144 (0.138)	0.763 (0.239)***	13.992 (4.456)***
b.2.Gender	−0.296 (0.192)	0.099 (0.163)	Δ 1.766 (2.920)
b.3.Age	0.022 (0.003)***	−0.018 (0.008)**	∇ 0.316 (0.133)**
b.4.Education	0.070 (0.041)*	0.032 (0.061)	Δ 0.562 (1.089)
b.5.Resident	0.423 (0.059)***	0.886 (0.383)**	Δ 15.743 (0.677)**
b.6.Work	0.155 (0.086)*	1.107 (0.350)***	Δ 19.681 (6.312)***
b.7.Leisure/shop	0.225 (0.105)**	0.734 (0.441)*	Δ 13.043 (7.291)
c.1.Unemployed	−0.046 (0.311)	0.356 (0.197)**	Δ 6.775 (3.981)*
c.2.Self-employed	−0.073 (0.076)	−0.357 (0.261)	∇ 5.830 (3.959)
c.3.Retired	0.084 (0.241)	1.353 (0.155)***	Δ 29.813 (4.070)***
c.4.Homemaker	−0.161 (0.364)	0.608 (0.191)***	Δ 13.123 (3.995)***
c.5.Student	−0.128 (0.259)	0.312 (0.331)	Δ 5.740 (6.399)
d.1.Lively	0.914 (0.421)**	0.232 (0.411)	Δ 4.132 (7.279)
d.2.Benefit	−1.315 (0.230)***	−0.251 (0.154)	∇ 4.465 (2.699)*
d.3.Access	0.412 (0.174)**	0.191 (0.124)	Δ 3.393 (2.233)
d.4.Open-air-mall	−0.557 (0.108)***	−0.177 (0.166)	∇ 3.149 (2.935)
d.5.Independent retailers	0.262 (0.172)	−0.152 (0.197)	∇ 2.703 (3.460)
d.6.Road works	0.230 (0.018)***	0.057 (0.031)*	Δ 1.007 (0.542)*
e.1.Pub-transp	0.044 (0.033)	0.051 (0.028)*	Δ 0.908 (0.503)*
e.2.Pedest-center	0.295 (0.015)***	−0.014 (0.019)	∇ 0.258 (0.341)
e.3.Bicycle	0.097 (0.026)***	−0.031 (0.042)	∇ 0.551 (0.762)
f.1.ΔShopping	0.303 (0.250)	0.851 (0.328)***	Δ 15.131 (5.812)***
f.2.ΔF&B	0.199 (0.203)	0.322 (0.113)***	Δ 5.721 (1.900)***
No. obs.	719	719	
Log. Pseudolikelihood	−1072.3759	−353.23309	
Pseudo R <sup>2</sup>	0.254	0.165	
Wald Chi <sup>2</sup> without clusters ( <i>p-value</i> )	447.30 (0.000)	95.11 (0.000)	

Note: Standard errors robust to heteroscedasticity on the date on which the survey was conducted in brackets. One, two, or three asterisks indicate coefficient significance at the 10-percent, 5-percent, and 1-percent levels, respectively.

With regard to the regression results (see Table 3) the first thing worth highlighting is the difference between the patterns of the factors that define the satisfaction expressed by passersby (a.1. Satisfaction) which, *a priori*, could have been affected by people's political bias, and the determinants that enable us to explain pedestrians' real behavior, i.e., their possible greater influx in the pedestrian zone (a.2. ΔFrequency), which would be an indirect proxy of their real satisfaction with the road works. In fact there are only 5 variables that present coefficients significantly different from zero and with the same arithmetical sign in the two regressions (Resident, Work, Leisure/Shop, Benefit and Works). These 5 variables provide us with a set of joint conclusions for the two regressions.

Both satisfaction with the pedestrianization process and frequency of visit to the pedestrianized zones rise the nearer the resident lives to the pedestrian zone, the clearer his/her motive is for visiting the zone (whether for work or leisure reasons), the greater his/her approval of the way in which the road works were carried out and the greater his/her valuation of the benefits that pedestrianization has brought to the neighborhood (the negative sign for this coefficient can be explained by the inverted formulation of the variable, see Table 2, whereby the smaller the value of the variable, the greater the benefit of pedestrianization is considered to be).

The value of the resident coefficient stands out in the five above-mentioned variables. In short, the nearer the surveyee lives to the pedestrianized streets and the greater the use that s/he can make of them, *a priori*, the greater the level of his/her satisfaction; or, to put it another way, the people that were most affected by the road works are the very same people that have most internalized their benefits. There are also some nuances regarding the way that these five variables coincide. For example, it should be highlighted that even though the leisure motive tends to have a greater influence on satisfaction, it is the work motive that most changes people's habits regarding visiting the areas.

The 14 different significant coefficients in the regressions are what really mark the difference between citizens' described satisfaction and changes in their habits.

With respect to described satisfaction, what is striking is that it appears to be closely linked to an older citizen who is well-educated and who has an environmentally-friendly vision of the city. This results in him/her clearly coming down in favor of the pedestrianizations previously carried out in the historical city center and policies to promote the bicycle and him/her not considering the new pedestrianizations to be hindering access to the neighborhoods for motor vehicles. They are, moreover, the people who are happiest with how the road works were carried out and who consider that the neighborhood has a livelier atmosphere post pedestrianization. Finally, satisfaction is closely linked to the belief that the pedestrian zone has turned into an open air mall (once again the coefficient's negative sign is explained by the way that the d.4. openairmall variable, see Table 2 has been construed). In general, one of the keys to the success of pedestrianization, which is also valid for developing countries, consists in transforming the pedestrianized street into a public space, with a livelier and more vibrant atmosphere that offers greater opportunities for optional and social activities to local residents and visitors alike (see Ghahramanpouri et al. (2012) for Malaysia; Yuen and Chor (1998) for Singapore and Yiu (2011) for Hong Kong).

At the same time, the people that have most changed their habits and have significantly increased their number of visits to the pedestrian zone are the youngest citizens and the elderly retired. Homemakers are another social group who seem to have adapted their routine to the pedestrianization process and to have taken greater advantage of it. It is also striking that, unlike satisfaction, this change in habits is closely linked to specific actions, i.e., frequency of visit positively correlates with the greater likelihood of increased consumption in F&B establishments and, especially, purchases in establishments in the new pedestrian zones. It can therefore be concluded that pedestrian traffic is one of the most

important variables for shop performance, which once more is something that is repeated in both developed countries (Hass-Klau, 1993), and developing countries (Iranmanesh, 2008 and Yiu, 2011).

The second regression confirms previously stated initial intuition that the passage of time clearly favors changes in habits; in the last wave (Jun12 variable) there was an average increase of almost 14 percent in the likelihood of an increase in the frequency with which surveyees visited the pedestrian zone.

## Conclusions

This paper has analyzed both citizens' stated and revealed satisfaction with the pedestrianization process in out-of-center areas of the city based on a specific study case, the city of Seville. This is a particularly interesting case as, even though the academic literature shows that in this field of study –pedestrianizations– the recommendations are fairly similar for developed and developing countries, the current situation in Seville and its surrounding area, with an unemployment rate that stands at almost 35%, places the city between these two worlds, and this facilitates the extrapolation of the findings, especially to other Mediterranean cities.

This is a case of study that stands out for the robust social response during the pedestrianization planning and execution period that came from residents' and retailers' associations in the affected neighborhoods, who criticized the difficulties that they had for finding somewhere to park and living with the bicycle lane, and also for gaining access to retail outlets. Indeed retail businesses waged campaigns to get the people who used them to sign petitions against the pedestrianization processes and this spawned an acrimonious social and media debate on the topic.

Unlike this conflict pre-pedestrianization, the results show that rather than any reticence to pedestrianization being extended to neighborhoods outside the historical city center, these processes were in fact soon warmly welcomed by citizens, especially by the residents of said neighborhoods. This is especially relevant if it is borne in mind that it was those very citizens who, in theory, bore the brunt of the road works, such as impeded access, noise and dirt. It is also true that the valuations that the citizens have given of the possible negative externalities linked to the road works are much lower than those who opposed the pedestrianization processes stated *a priori*. In fact, time seems to have been on the side of these pedestrianization processes and, as the months have gone by since the road works were completed and the retail and F&B supply has adjusted to the new situation, the real indicators regarding their use have improved, while at the same time any qualms about the way that the road works were carried out have diminished. Despite this positive valuation, the analysis of the determinants of satisfaction also indicate that road works of this type need to be carefully planned so to minimize their negative impact on the neighborhood's economic and social activity, whilst at the same time all possible corrective measures need to be put in place to ensure the best possible access to the neighborhood by motor vehicle after the pedestrian zone has been constructed. Public perception of the two events is the key to citizens' eventual satisfaction.

With regard to citizen profile, those who state their greatest satisfaction with the pedestrianization processes are usually the elderly, with a level high education and an environmental awareness that makes them call for a new town planning model with less dependence on motor vehicles (which is the reason why they support policies to promote bicycles). Meanwhile, although the work motive is a significant determinant of satisfaction with the pedestrian zones and frequency of visit, the truth is that their usage is closely linked to collectives who have more available free time or who have more flexible timetables at least, including the retired, the young and homemakers.

To summarize, the data show that even when it lacks historical appeal or monuments, as is the case of Asunción Street, the presence of a pedestrian street or zone in any neighborhood, can not only result in a change in the urban landscape, but also benefits leisure and the appeal of the location for making purchases and consuming F&B. Indeed, the radical changes seen in people's leisure activities, which are increasingly consumer-linked, may eventually see the new pedestrian zones performing the relaxation and recreation function in a neighborhood that was previously performed by parks, with these zones turning into the open air malls that the public demand. This may be even more true if it is borne in mind that pedestrian zones are often scenarios for open-air cultural activities, such as concerts traditionally given by bands in parks and gardens. This necessary coexistence of economic activity and leisure can also be found in other experiences in developing countries, where the building of children's play areas is recommended in pedestrianized streets to engage them while their elders shop and consume (Samuel, 2013).

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